UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,751	10/29/2003	John Frederick Porter	11277-0039	7560

8933 7590 05/03/2007

DUANE MORRIS, LLP
IP DEPARTMENT
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103-4196

EXAMINER	
MAKI, STEVEN D	

ART UNIT	PAPER NUMBER
1733	

MAIL DATE	DELIVERY MODE
05/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,751	PORTER, JOHN FREDERICK	
	Examiner	Art Unit	
	Steven D. Maki	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-37* is/are pending in the application.

4a) Of the above claim(s) *19 and 20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18 and 21-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *082106,080706*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2) **Claims 17-18, 22-23 and 26-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US 4,450,002), Canada (CA 2006149) and Berke et al (US 5,753,368).**

Newman et al, directed to making SMOOTH reinforced cementitious boards, discloses providing a **facing sheet comprising an open mesh glass scrim and a polymer web such as a meltblown web** (col. 2 lines 21-40). The open mesh scrim comprises transverse yarns 25 and longitudinal yarns 30 bonded together at their cross over points 35 wherein the yarn comprises glass filaments coated by an alkali and moisture resistant thermoplastic polymer coating such as polyvinyl chloride or thermosetting polymer coating such as epoxy (col. 5 lines 33-67). The meltblown web comprises thermoplastic fibers such as polypropylene fibers (col. 6 lines 1-45). Newman et al teaches joining the meltblown web to the open mesh scrim and prefers directly forming the meltblown web on the open mesh scrim such that the meltblown web adheres (unites) to the open mesh scrim (col. 2 lines 30-34, col. 3 lines 16-23, col. 6 lines 1-3). Newman et al discloses making a SMOOTH cement board by depositing a first low viscosity cementitious slurry 76 formed of a composition comprising cement on the facing sheet 72 (e.g. facing sheet 10 comprising the open mesh scrim and meltblown web), *optionally* depositing a second higher viscosity cementitious slurry 93

on the deposited layer of the first cementitious slurry 76, *optionally* depositing a low viscosity third slurry 91 on a facing sheet 10 comprising the open mesh scrim and meltblown web such that the low viscosity slurry generally passes through the facing sheet 10 and window panes over the mesh openings 40 to create a smooth surface on the cement board, applying the facing sheet 10 supplied from roll 70 and onto the first cementitious slurry 76 (and optionally cementitious slurry 93) such that the exposed three dimensional grid profile surface 55 on the lower face of the facing sheet 10 directly contacts the cementitious slurry(s), applying pressure with pressing rolls 80 such that facing sheet is pressed into the cementitious slurry and the cementitious slurry is forced up through the mesh openings of the facing sheet 10, and hydrating the cementitious material. The meltblown web (nonwoven web) of the facing sheet maintains a portion of the cementitious slurry 76 on the surface of the glass fiber facing sheet 10 and causes the slurry to window pane the mesh openings 40 of the glass scrim 15 thereby mechanically integrating the facing sheet into the cement board and forming a substantially planar bridge surface between the transverse and longitudinal yarns. See abstract, figure 6, figure 8, col. 2 lines 13-14, 37-40, 61-63, col. 3 lines 16-67, col. 6 lines 48-59, col. 9 lines 1-67, col. 10 lines 1-37, col. 12 lines 4-17, col. 12 lines 26-30.

In view of the above disclosure, Newman et al is considered to teach a method of making a smooth cementitious board having a cement skin adjacent an outer face. In any event: As to claims 17 and 18, it would have been obvious to one of ordinary skill in the art to penetrate the facing sheet(s) 10 in the cementitious slurry in Newman et al's process of making a smooth cementitious board such that the facing sheet is embedded

in cementitious material and a cement skin is formed since (1) Newman et al, directed to making a smooth cement board having reinforcing facing sheet(s) each comprising a open mesh scrim and a nonwoven web, teaches that the meltblown web of the facing sheet maintains a portion of the cementitious slurry 76 on the surface of the glass fiber facing sheet 10 and causes the slurry to window pane the mesh openings 40 of the glass scrim 15 thereby mechanically integrating the facing sheet into the cement board and forming a substantially planar bridge surface between the transverse and longitudinal yarns, (2) Mathieu, also directed to making a cement board having reinforcing sheets (e.g. mesh, scrim, nonwoven fabric) teaches at least partially embedding the reinforcing mesh in the cement and specifically suggests completely embedding the reinforcement mesh in the cement (col. 13 lines 58-67, col. 14 lines 1-67, co.. 15 lines 1-67, col. 16 lines 1-47, col. 1 lines 41-50, col. 6 lines 48-61, col. 16 lines 29-47, col. 17 lines 55-65) and (3) Galer, also directed to making a cement board having reinforcing sheets (woven mesh, scrim, nonwoven), suggests submeging the reinforcement just below one or both of the surfaces so that the mesh is covered by a smooth, continuous, uniformly thin layer of cementitious material and is properly anchored in the panel. Mathieu, which is directed to making the same type of cement board as Newman et al, provides ample suggestion to perform Newman et al's process of making a cement board such that the reinforcing facing sheet 10 is completely embedded in the cement immediately beneath the surface ("cement skin") of the cement panel. Galer, which is directed to the same type of cement board as Newman et al, motivates one of ordinary skill in the art to completely embed the reinforcing sheet

10 so that the reinforcing sheet is properly anchored and the desired smooth surface is formed. It is noted that Newman et al teaches and contemplates completely embedding a meltblown web in the cement because Newman et al teaches that the meltblown polymer web may be applied to both faces of the glass scrim 15 (col. 6 lines 1-3).

With respect to the hydrophilic material (wetting agent), Newman et al does not recite applying a wetting agent to the meltblown polymer web.

Canada, also directed to making a cement board having reinforcing sheets, discloses a process of manufacturing a cement panel comprising:

arranging a **surface reinforcing layer (14)** on a surface of a forming apparatus / mold 20;

spraying an inner surface 24 of the reinforcing layer 14 with a suitable polymer (e.g. acrylic resin);

casting **cementitious material (32)** on the coated reinforcing layer 14 and vibrating the apparatus to facilitate *penetration* of the cementitious material into the coated reinforcing layer 14;

spraying a **surface reinforcing layer (16, 36)** with a suitable polymer (e.g. acrylic resin);

placing the coated reinforcing layer 36 over the cementitious material 32 and pushing the coated reinforcing layer 36 into the cementitious material 32 to facilitate *penetration* of the composition into the coated reinforcing layer 36; and

curing the cement panel wherein the manufactured cement panel comprises a surface reinforcing layer on each side of a cementitious core 12.

Canada teaches that the surface reinforcing layer may be a porous fabric or paper. Canada teaches that the fabric should be composed of an alkaline resistant material (e.g. alkali resistant polymer fibers or glass fibers coated with a polymer) so it will not be damaged and eventually destroyed by the alkaline in the cementitious composition. Canada teaches that the fabric may be a random fiber fabric ("nonwoven fabric"). As an example of a fabric, Canada discloses suggests using a mat ("nonwoven fabric") of glass fibers coated with polymer during the manufacture of the mat. With respect to spraying the suitable polymer such as acrylic resin, Canada teaches "This polymer coating, which preferably is in addition to a polymer coating applied to the glass fiber during the manufacture of the mat, provides additional protection for the fibers of the reinforcing layer and results in a stronger bond between the central core 12 and fabric layer. One reason for the stronger bond is that the liquid polymer coating will decrease the viscosity of the cementitious composition when it is poured into the form and this in turn permits the composition to penetrate the fabric or paper layers." (pages 13-14). The sprayed polymer (e.g. sprayed acrylic resin) functions, therefore, as a wetting agent and enhances adhesion of fabric to an alkali cementitious matrix. In figures 3-8, Canada shows a process of making a cement panel comprising a single fabric layer 14 and a single fabric layer 16. Canada additionally teaches "... instead of a single layer of surface-reinforcing fabric or paper on each major surface of the product, several layers of such material placed one over another can be used with the layers being adhered together by the cementitious composition and/or polymer coatings" (page 18). Canada is silent as to the polymer coated glass fibers being thermoplastic coated glass fibers.

With respect to the hydrophilic material (wetting agent) as in claim 17, it would have been obvious to one of ordinary skill in the art to apply a hydrophilic material as claimed to the mesh and polypropylene fiber meltblown web in Newman et al's process when completely embedding as suggested by Mathieu and Galer since (1) Canada suggests spraying suitable polymer such as acrylic resin to facilitate penetration of cementitious material (i.e. cement) into fabrics and (2) Berke et al informs one of ordinary skill in the cement art that polypropylene fibers tend to be hydrophobic due to the nature of the material and require a wetting agent to provide a surface tension characteristic that allows them to become more easily dispersed within an aqueous concrete mix.

Hence, Newman discloses that the cement board should have a SMOOTH surface. The secondary art to Mathieu and Galer provide ample suggestion and motivation to completely embed Newman et al's facing sheet just below the surface of the cement board with the expected benefits of obtaining proper anchoring and a SMOOTH surface. When embedding fibrous material, Canada and Berke et al suggest applying a wetting agent to the fibrous material to facilitate the desired embedding of the fibrous material in cement - only the expected results (improved bond between the cement and fibrous material) being obtained.

As to claims 22 and 23, Newman et al suggests using polypropylene fibers for the meltblown polymer web.

As to claim 26, the claimed heat fusing step reads on the step of adhering the meltblown fibers to the open mesh as disclosed by Newman et al.

As to claims 27-36: Newman et al teaches adhering the yarns of the open mesh scrim together using polymer binder (adhesive). Canada and Berke suggest coating the mesh and nonwoven of Newman et al with "hydrophilic compound" to facilitate the complete embedding of the facing in the cement. It would have been obvious to use a slurry comprising cement powder and "foaming agent" for the first or second slurry in view of Mathieu's suggestion to include foaming agent in a cementitious slurry in order to make the board lighter. Newman et al teaches compacting with pressing rolls 80. Newman et al suggests using polypropylene fibers for the meltblown polymer web.

3) **Claims 21 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US 4,450,002), Canada (CA 2006149) and Berke et al (US 5,753,368) as applied above and further in view of Cooper (US 6,254,817).**

As to claims 21 and 37, it would have been obvious to one of ordinary skill in the art to art to form sheathed glass fibers using the claimed steps of wrapping glass fibers with fibers of alkali resistant material and heating in view of (1) Newman et al's teaching that the glass fibers should be encapsulated by alkali resistant polymer such as thermoplastic material to prevent chemical interaction between the glass fibers and cementitious material and (2) Cooper et al suggests forming alkali resistant sheathed fibers for a mesh of a cement board by using the steps of wrapping glass fibers with thermoplastic (fibers of alkali resistant material) and heating.

4) **Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 6,054,205) in view of Mathieu (US 6,187,409), Galer (US**

4,450,002), Canada (CA 2006149) and Berke et al (US 5,753,368) as applied above and further in view of Schupack (US 4,617219).

As to claims 24-25, it would have been obvious to use a spunbonded web instead of a meltblown web as the nonwoven polymer web since Schupack, also directed to making a cement board having reinforcing sheets therein, suggests using a polypropylene spunbonded as a nonwoven web to be embedded in the cement material.

As to claim 26, it would have been obvious to one of ordinary skill in the art to heat fuse the mesh and nonwoven web (meltblown web or spunbonded web) to adhere (unite) the mesh and nonwoven web together since Schupack also teaches bonding a nonwoven to a scrim for example by melt bonding.

Remarks

5) Applicant's election with traverse of Species B, Species 2, and Species X in the reply filed on 2-22-07 is acknowledged. The traversal is on the ground(s) that claims 28-33, 35 and 36 are generic. This argument is moot since (1) the examiner agrees that claims 28-33, 35 and 36 are generic to the elected invention of Species B, Species 2 and Species X and (2) claims 28-33, 35 and 36 have been examined on the merits. With respect to the remaining claims of 19 and 20, applicant agrees that "... Claims 19 and 20 are not readable on the elected species..." (page 8 of response filed 2-22-07). Since claims 17, 18 and 21-37 have been examined on the merits and applicant agrees that claims 19 and 20 do not read on the elected invention, applicant's arguments

regarding the restriction set forth in the paper filed 11-15-06 are moot. The requirement is still deemed proper and is therefore made FINAL.

Applicant's arguments with respect to claims 17, 18 and 21-37 have been considered but are moot in view of the new ground(s) of rejection. With respect to the new combination in clam 17 of a cement skin adjacent to an outer face and a reinforcement fabric embedded at a depth from the outer face, note the new ground of rejection and the additional comments: Newman et al teaches that the facing sheet 10 may be used on both sides of the cement panel, which is to be formed with a SMOOTH surface. Newman teaches that the nonwoven may be on both sides of the mesh and thereby contemplates complete embedment of a nonwoven. Newman et al teaches that slurry 91 is optional. Canada teaches that "at least half" of the fabric is penetrated by the cementitious material. Mathieu and Galer unambiguously teach complete embedding of fabric in a cement panel. Canada and Berke et al's teachings regarding wetting agent are applicable to manufacture of a cement panel whether or not the fabric is partially embedded or completely embedded.

Japan 344 (JP 53-119344), Kimura (US 5,749,211), Okamoto et al (US 5,580,642), Sugita (US 4m706,430) and Curzio (US 4,539,249) are cited of interest.

6) No claim is allowed.

7) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven D. Maki
April 30, 2007

STEVEN D. MAKI 4-30-07
PRIMARY EXAMINER